

Exhibit 17

Stephen S. Hecht, Ph.D.

Winston R. and Maxine H. Wallin Land Grant Professor of Cancer Prevention
American Cancer Society Professor, American Chemical Society Fellow
Masonic Cancer Center, University of Minnesota, Minneapolis, MN 55455

Education

Duke University, B.S. (with honors), Chemistry – 1964

Massachusetts Institute of Technology, Ph.D., Organic Chemistry – 1968

Professional Experience

Masonic Cancer Center, University of Minnesota, Minneapolis, MN

- Wallin Land Grant Professor of Cancer Prevention and Professor, Department of Laboratory Medicine and Pathology, 1996-present
- Head, Carcinogenesis and Chemoprevention Program, 1998-2014
- Member, Medicinal Chemistry and Pharmacology Graduate Programs, 1996-present

American Health Foundation, Valhalla, NY

- Director of Research, 1987-1996
- Chief, Division of Chemical Carcinogenesis, 1980-1996
- Head, Section of Organic Chemistry, Division of Environmental Carcinogenesis, 1973-1980

United States Department of Agriculture, Philadelphia, PA

- National Research Council Fellow, 1971-1973

Haverford College, Haverford, PA

- Assistant Professor of Chemistry, 1969-1971

Massachusetts Institute of Technology, Cambridge, MA

- Postdoctoral Fellow, Mass Spectrometry, Professor Klaus Biemann, 1968-1969

Honors and Awards

Academy for Excellence in Team Science, University of Minnesota, 2019

Listed in AACR Landmarks in Cancer Research, 2017: Tobacco-Specific Nitrosamines, *JNCI* 60: 819-824 (1978)

University of Minnesota Medical School Dean's Distinguished Research Lectureship, 2017

American Chemical Society Minnesota Section, Minnesota Award, 2017

University of Minnesota Medical School Wall of Scholarship, 2015

Elected American Association for the Advancement of Science Fellow, 2014

Selected as next Editor-In-Chief, *Chemical Research in Toxicology*, American Chemical Society, 2012

Joseph Cullen Award, American Society of Preventive Oncology, 2012

Elected American Chemical Society Fellow, 2009

Founders' Award, Division of Chemical Toxicology, American Chemical Society, 2009

Academy for Excellence in Health Research, Academic Health Center, University of Minnesota, 2006

American Association for Cancer Research-Cancer Research and Prevention Foundation Award for Excellence in Cancer Prevention Research, 2006

Merit Award, National Cancer Institute, 2004-2014

Dr. William Cahan Distinguished Professor Award, Flight Attendant Medical Research Institute, 2002

Alton Ochsner Award Relating Smoking and Health, 2001

American Cancer Society Research Professor, 2000-2009

Wallin Chair in Cancer Prevention, Masonic Cancer Center, University of Minnesota, 1996-
Endowed Chair in Carcinogenesis and Chemoprevention, American Health Foundation, 1992-1996
Cancer Research Covers: March 1, 1988; February 15, 1993
Chemical Research in Toxicology Covers: June 1998, July 2007, February 2011
Cancer Epidemiology Biomarkers & Prevention Cover, December 2003
Outstanding Investigator Grant, National Cancer Institute, 1987-2001
Research Career Development Award, National Cancer Institute, 1975-1980
National Research Council Fellow, 1971-1973
Phi Beta Kappa, 1964

Current Research Interests

- Mechanisms and prevention of tobacco-induced cancer
- Carcinogen biomarkers and their application in molecular epidemiology and cancer prevention
- Mechanisms of chemical carcinogenesis in humans
- Chemoprevention of cancer

Selected Active Grant Support

Principal Investigator

Continually funded by the U.S. National Cancer Institute since 1975

- NCI, CA-81301, Metabolism of Carcinogenic Tobacco-Specific Nitrosamines, 1999-
- NCI, CA-203851, e-Cigarettes: Formaldehyde DNA Adducts, Oxidative Damage, and Potential Toxicity and Carcinogenesis, 2017-
- NCI, CA-222005, Clinical Trial of Watercress in Detoxification of Environmental Toxicants and Carcinogens, 2018 -
- NCI, CA-138338 (P01), Mechanisms of Ethnic/Racial Differences in Lung Cancer due to Cigarette Smoking, 2010 -

Co-Principal Investigator

NIEHS, U2CES26533, Minnesota CHEAR Exposure Assessment Hub

Selected Professional Activities

Peer Review

AACR-Johnson & Johnson Lung Cancer Innovation Science Grants Committee, 2017-2019
NIH Center for Scientific Review Special Emphasis Panel, Member 2020; Chair, 2019
NIH Cancer Prevention Study Section, ad hoc, 2018
Special Emphasis Panel, NCI PREVENT Cancer Program, 2011 –
NIEHS Childrens' Health Exposure Analysis Resource Access Committee, 2017 -
Special Emphasis Panel, NCI SPORE grants, 2015
Council for Extramural Grants, American Cancer Society, 2010-2014
Chair, Chemo/Dietary Prevention Study Section, National Institutes of Health 2006-2009
Board of Scientific Counselors, Subcommittee 2, Basic Sciences, National Cancer Institute, 2001-2004
Peer Review Committee on Carcinogenesis, Nutrition, and the Environment, American Cancer Society, 1998-2001; Chair, 2001
Grants Review Panel, American Institute for Cancer Research, 1984-1987
Chemical Pathology Study Section, National Institutes of Health, 1981-1985

Ad Hoc Reviewer:

National Cancer Institute, Cancer Center Support Grant Program

National Institute of Environmental Health Sciences
Dutch Cancer Society
Florida Department of Health
Alberta Heritage Foundation for Medical Research
Veterans Administration
New Jersey Commission on Cancer Research
United States - Israel Bi-national Science Foundation
California Tobacco Related Disease Research Program
Ohio Cancer Research Associates

Selected Advisory Groups and Related Activities

European Food Safety Authority, Contamination Working Group on N-Nitrosamines in Food, 2021
National Research Council Committee on Health Effects and Patterns of Use of Premium Cigars, 2021
U.S. Food and Drug Administration Panel on N-Nitrosamines in Pharmaceutical Products, 2021
Panel Member, 2018 American Cancer Society Professors' Meeting Discussion: "Bad luck" hypothesis
Member (ad hoc), Tobacco Products Scientific Advisory Committee, FDA, 2018
Reviewer, U.S. National Academies, Public Health Risks and Benefits of e-Cigarettes, 2017
Nomination Committee, Division of Chemical Toxicology, American Chemical Society, 2017-2019
Expert Consultation on the Integrated Exposure-Response Function, Univ. of Washington, 2017
Data Safety and Monitoring Board: NHLBI HAPIN study, Household Air Pollution and Health, 2017-
Chair, Nominating Committee, American Chemical Society Sosnovsky Award for Cancer Research, 2014
International Agency for Research on Cancer Monographs Program, Peer Review Committee, 2014
Frontiers in Cancer Prevention Annual Meeting, Program Committee, 2013
Round Table Meeting of the Senate Commission on Food Safety of the German Research Foundation: Nitrate and
Nitrite in the Diet, Bonn, Germany, 2012
International Agency for Research on Cancer, Workshops on Tumor Concordance and Meshansims of
Carcinogenesis, Lyon, France, 2012
Institute of Medicine, Committee on Scientific Standards for Studies on Reduced Risk Tobacco Products, 2011
AACR Cancer Prevention Committee and Cancer Prevention Summit, 2016
Tobacco Constituents Subcommittee, TPSAC, U.S. Food and Drug Administration, 2010
Flavor and Extract Manufacturers Association Expert Panel, 2010-
AACR Task Force on Tobacco and Cancer, 2009- 2012
External Advisory Board, University of Illinois Cancer Center, 2010-2014
Advisory Committee, Translational Cancer Research Center, South Dakota State University, 2009-2014
Chair-Elect to Past Chair, Chemistry in Cancer Research Working Group, AACR, 2007-2009
Chair, Program Committee, AACR Conference, Chemistry in Cancer Research: A Vital Partnership, 2007
Member, NCI-SRNT FDA Tobacco Regulation Legislation Review Project, 2009
International Agency for Research on Cancer, Knowledge Synthesis in Gene-Environment Interactions in
Cancer, Lyon, France, 2009
Strategic Dialogue on Tobacco Harm Reduction, 2006-2007
Committee on Defining Upper Limits for Tobacco Toxicants, WHO TobReg, 2006-2007
Chair, Scientific Advisory Board, Center for Excellence in Environmental Toxicology, University of Pennsylvania,
2005-2010
Chemistry in Cancer Research, AACR, Think Tank of Leaders in the Field, 2005
Chapter Editor for Cancer, Surgeon General's Report, How Cigarette Smoking Causes Disease, 2010
Contributor, Surgeon General's Report, Passive Smoking and Health, 2004; Health Consequences of Smoking,
Fifty Years of Progress, 2014
Co-organizer, Symposium on Tobacco Carcinogenesis, American Chemical Society National Meeting, 2005
Program Committee Co-Chairperson, AACR Frontiers in Cancer Prevention Meeting, 2004, 2007

National Cancer Institute Carcinogenesis Think Tank, 2004
National Cancer Institute Biotechnology Initiative for Cancer Public Health Working Group, 2004
National Tobacco Monitoring, Research, and Evaluation Workshop, 2002
International Agency for Research on Cancer Monographs on the Evaluation of Carcinogenic Risks to Humans, Vol. 37, *Tobacco Habits Other than Smoking*, 1985; Vol. 83, *Tobacco Smoke and Involuntary Smoking*, 2002; Vol. 85, *Betel Quid and Areca Nut*, Chair, 2003; Vol. 89, *Smokeless Tobacco and Some Related Nitrosamines*, 2004; Vol 100E, *A Review of Human Carcinogens-Lifestyle Factors*, 2009
International Agency for Research on Cancer Handbooks on Cancer Prevention, Vol. 9, *Cruciferous Vegetables, Isothiocyanates, and Indole-3-carbinol*, 2003
Lung Cancer Progress Review Group, Co-Chair, Chemoprevention Section, National Cancer Institute, 2001
Board of Scientific Counselors, National Toxicology Program, 1997-2001
Science Advisory Board, National Center for Toxicological Research, FDA, 1998-2002
Board of Scientific Counselors, Division of Cancer Etiology, National Cancer Institute, 1989-1995
Division of Chemical Toxicology, American Chemical Society, Chair, 1999-2000; Chair-elect, 1997-1998; Program Chair, 1996; Chair, Nominations Committee, 2011
Board of Directors, Minnesota Smoke Free Coalition, 1997-2001
Health Research Committee, Health Effects Institute, 1992-1996
External Scientific Advisory Board, Ohio State University Comprehensive Cancer Center, 2002-2006
Corporation Visiting Committee, Division of Bioengineering and Environmental Health, Massachusetts Institute of Technology, 2000-2003
External Advisory Committee, Environmental Health Sciences Center, Oregon State University, 1996-2000
Cancer Prevention Think Tank, American Cancer Society, 1995
American Association for Cancer Research Program Committee, 1983, 1990, 1993, 1997, 1999, 2000, 2003-2005, 2009 (co-chair), 2010; Session Chair, 1984, 1986, 1988, 1991, 200, 2003
Advisory Group, Center in Molecular Toxicology, Vanderbilt University School of Medicine, 1991-1997; Chair, 1995-1997
Advisory Panel, Inhalation Toxicology Research Institute, 1990-1996
Advisory Panels, Chemical Industry Institute of Toxicology, 1990-1996
Advisory Panel, NYU-Nelson Institute of Environmental Medicine, 1992-1995
Peer Review Committee-Scientific Council, International Agency for Research on Cancer, 1991
Upper Aerodigestive Cancer Working Group, National Cancer Institute, 1986-1989
Contributor, Surgeon General's Report on the Health Consequences of Using Smokeless Tobacco, 1986

Editorial Activities

Editor-in-Chief, *Chemical Research in Toxicology*, 2013 - 2017
Associate Editor, *Journal of Medicinal Chemistry*, 2004 - 2012
Associate Editor, *Nicotine and Tobacco Research*, 2009 - present

Editorial Boards:

Mutagenesis, 2014 - present
Cancer Research, 1980 - 2000; 2010 - 2012
Cancer Epidemiology, Biomarkers, and Prevention, 1990 - present
Molecular Cancer Therapeutics, 2001 - 2012
Cancer Prevention Research, 2008 – present
Journal of Environmental Science and Health, Part C, 2016 - present
Chemical Research in Toxicology, 1988 - 1990, 1992 - 1994, 2010 - 2012
Lung Cancer, 2001 - 2012
Cancer Letters, 1999 - 2006
Carcinogenesis, 1986 - 1990; 2001 - 2006

Chemico-Biological Interactions, 1992 - 1998
Mutation Research, 2002 - 2007
Clinical Cancer Research, 2007 - 2011

Selected Invited Lectures and Conferences, 2002-2019

Cancer Research Campaign, Manchester, England	Dietary Factors and Cancer Prevention, Rochester, MN
State University of New York, Stony Brook	Wadsworth Center, Albany, NY
Society of Toxicology National Meetings	University of Pennsylvania
New York University	University of Iowa
Virginia Piper Cancer Research Institute	University of Louisville
Vanderbilt University	University of Kentucky
Reducing Tobacco Harm Conference, Washington, DC	3M Company, St. Paul, MN
Diet and Optimum Health, Portland, OR	Reducing Tobacco Use in Minnesota
American Cancer Society, Atlanta, GA	Penn State, Hershey Medical Center
Mechanisms of Carcinogenesis and Xenobiotic Metabolism, Rutgers University	Northwestern University
International Symposium on Polycyclic Aromatic Compounds	MD Anderson Cancer Center (2)
EMS Special Conference, Breast Cancer and Environmental Mutagens	University of Utah
Mayo Clinic, Rochester, MN	Abbott Laboratories
Biomarkers for Tobacco Exposure, Minneapolis	Virginia Commonwealth University
University of Wisconsin	Medical University of South Carolina
Ohio State University	Environmental Mutagen Society, Puerto Rico
National Cancer Institute Chemoprevention Branch	Dartmouth University
Columbia University	Toxicology Forum, Washington, DC
Society for Research on Nicotine and Tobacco	Tulane University
East-West Conference on Tobacco and Alcohol	Indiana University
Tobacco Harm Reduction Network	South Dakota State University
Chemistry in Cancer Research	EOHSI, Rutgers University/UMDNJ
National Cancer Institute – Frederick	World Conference on Tobacco or Health, Mumbai
Evaluation of Smokeless Tobacco, Washington, DC	International Agency for Research on Cancer, Lyon
University of California, San Diego	Ohio State University
AACR Frontiers in Cancer Prevention Meetings	University of Arizona Cancer Center
AACR National Meetings	University of Oklahoma
Society for Research on Nicotine and Tobacco	UCLA Molecular Toxicology
University of North Carolina	University of Tennessee
Hormel Institute	Microsomes and Drug Oxidation, Beijing
University of Pittsburgh	University of Sao Paulo, Brazil
National Cancer Institute – Causes of Cancer	ETH, Zurich
National Cancer Institute – Methods and Biomarkers	Biomarkers Workshop, Münster, Germany
Roswell Park Cancer Center	Medical College of Wisconsin
Hanna Symposium, Univ. of Minnesota	Healthy Foods, Healthy Lives Symposium, Univ. of Minnesota
New Jersey Governor's Conference on Cancer Prevention	Japan Society of Clinical Oncology, Yokohama
American Chemical Society National Meetings	Nitrate and Nitrosamines, Bonn, Germany
	Gordon Research Conference Drug Metabolism, Keynote Speaker
	Brown University
	University of Rhode Island

Minnesota Department of Health
Beijing University of Technology
Peking University
National Center for Nanoscience and Technology,
Beijing
U.S. Food and Drug Administration-e-Cigarettes
North Dakota State University
U.S. Food and Drug Administration-Biomarkers
Joint AACR/IASLC Meeting, San Diego

ETH, Zurich
IASLC Meeting, Vienna, Austria
University of Pittsburgh
Penn State Cancer Institute
King's College, London
American Association for Dental Research
Minnesota Department of Health
Kaohsiung Medical University, Taiwan

University Activities

Principal Lecturer and Organizer

Chemical Carcinogenesis and Chemoprevention, 3 credits, 1998 - 2003

Lecturer

Chemical Aspects of Drug Metabolism and Bioactivation
Advanced Pharmacology
Cancer Epidemiology
Molecular Epidemiology

Academic Program Memberships

Medicinal Chemistry Graduate Program
Pharmacology Graduate Program
Combined M.D./Ph.D. Program

Committees

Masonic Cancer Center: Executive Committee and Cancer Prevention and Control Steering Committee,
1998-2014
Masonic Cancer Center Space Committee, 2016 -
M.D./Ph.D. Program Steering Committee, 2000 - 2009

Memberships

American Association for Cancer Research
American Association for the Advancement of Science
American Chemical Society
American Society of Preventive Oncology
American Society for Mass Spectrometry
International Society for the Study of Xenobiotics
Society for Research on Nicotine and Tobacco
American Society for Pharmacology and Experimental Therapeutics

Selected Contributions to Science (with key references)

1. *Tobacco-specific nitrosamines: identification in tobacco products, carcinogenicity, metabolism, DNA binding, and biomarkers.* The tobacco-specific nitrosamines *N'*-nitrosonornicotine (NNN) and 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) are considered to be important causes of tobacco-induced cancer. We carried out most of the carcinogenicity, metabolism, and DNA binding studies of NNN

and NNK, leading to a broad understanding of their uptake and metabolism in humans. We developed highly sensitive mass spectrometric methods for analysis of their metabolites in humans; the NNAL biomarker in particular has been widely used in multiple studies of tobacco-specific carcinogen exposure and risk for cancer. Our studies on NNAL in the urine of non-smokers exposed to secondhand smoke contributed to the clean indoor air now enjoyed nearly universally.

- a. **Hecht, S. S.**, Carmella, S. G., Murphy, S. E., Akerkar, S., Brunnemann, K. D., and Hoffmann, D. (1993) A tobacco-specific lung carcinogen in the urine of men exposed to cigarette smoke. *N. Engl. J. Med.* 329, 1543-1546.
 - b. **Hecht, S. S.** (1998) Biochemistry, biology, and carcinogenicity of tobacco-specific N-nitrosamines. *Chem. Res. Toxicol.* 11, 559-603.
 - c. **Hecht, S. S.**, Stepanov, I., and Carmella, S. G. (2016) Exposure and metabolic activation biomarkers of carcinogenic tobacco-specific nitrosamines. *Acc. Chem. Res.* 49, 106-114. PMCID: PMC5154679
 - d. Li, Y., and **Hecht, S. S.** (2021) Identification of an N'-nitrosonornicotine-specific deoxyadenosine adduct in rat liver and lung DNA. *Chem. Res. Toxicol.* 34, 992-1003.
2. *Application of tobacco carcinogen and toxicant biomarkers in clinical and epidemiologic studies.* We developed a panel of urinary tobacco carcinogen and toxicant biomarkers, using state of the art high throughput liquid chromatography-mass spectrometric techniques, and have applied these methods in collaborative studies to explore human exposure and risk. Using samples from nested case-control studies within prospective cohorts, we demonstrated that NNAL, nicotine metabolites, and phenanthrene tetraol (a PAH metabolite) were significantly related to lung cancer and that NNN was significantly related to esophageal cancer. We further showed significant differences in levels of these metabolites in ethnic groups with differing risks for lung cancer, and have analyzed more than 60,000 urine samples for multiple biomarkers in a clinical study of the reduced nicotine cigarette.
- a. Yuan, J. M., Knezevich, A. D., Wang, R., Gao, Y. T., **Hecht, S. S.**, and Stepanov, I. (2011) Urinary levels of the tobacco-specific carcinogen N'-nitrosonornicotine and its glucuronide are strongly associated with esophageal cancer risk in smokers. *Carcinogenesis* 32, 1366-1371. PMCID: PMC3202311
 - b. Park, S. L., Carmella, S. G., Ming, X., Stram, D. O., Le Marchand, L., and **Hecht, S. S.** (2015) Variation in levels of the lung carcinogen NNAL and its glucuronides in the urine of cigarette smokers from five ethnic groups with differing risks for lung cancer. *Cancer Epidemiol. Biomarkers Prev.* 24, 561-569. PMCID: PMC4355389
 - c. Yuan, J. M., Nelson, H. H., Carmella, S. G., Wang, R., Kuriger-Laber, J., Jin, A., Adams-Haduch, J., **Hecht, S. S.**, Koh, W. P., and Murphy, S. E. (2017) CYP2A6 genetic polymorphisms and biomarkers of tobacco smoke constituents in relation to risk of lung cancer in the Singapore Chinese Health Study. *Carcinogenesis* 38, 411-418. PMCID: PMC6248819
 - d. Hatsukami, D. K., Luo, X., Jensen, J. A., al'Absi, M., Allen, S. S., Carmella, S. G., Chen, M., Cinciripini, P. M., Denlinger-Apte, R., Drobos, D. J., Koopmeiners, J. S., Lane, T., Le, C. T., Leischow, S., Luo, K., McClernon, F. J., Murphy, S. E., Paiano, V., Robinson, J. D., Severson, H., Sipe, C., Strasser, A. A., Strayer, L. G., Tang, M. K., Vandrey, R., **Hecht, S. S.**, Benowitz, N. L., and Donny, E. C. (2018) Effect of immediate vs gradual reduction in nicotine content of cigarettes on biomarkers of smoke exposure: a randomized clinical trial. *JAMA* 320, 880-891. PMCID: PMC6372240
3. *Metabolism and DNA adducts of PAH and aldehydes.* We carried out extensive studies on metabolism and DNA adduct formation by these compounds. The results of these studies were consistent with, expanded, and supported the bay region diol epoxide model of PAH carcinogenicity, leading us to develop the phenanthrene tetraol biomarker of PAH exposure plus metabolic activation, and to use high resolution mass spectrometry for analysis of benzo[a]pyrene-DNA adducts in the human lung. Our studies on

nitrosamine metabolism evolved to investigations of related metabolically formed aldehydes. Our group was the first to identify acrolein and crotonaldehyde-derived DNA adducts that have been extensively investigated, and we developed the first methods for reliable quantitation of formaldehyde and acetaldehyde-DNA adducts in humans. The latter are particularly relevant to alcohol consumption and its role in carcinogenesis.

- a. Balbo, S., Meng, L., Bliss, R. L., Jensen, J. A., Hatsukami, D. K., and **Hecht, S. S.** (2012) Kinetics of DNA adduct formation in the oral cavity after drinking alcohol. *Cancer Epidemiol. Biomarkers Prev.* 21, 601-608. PMID: PMC3319307
 - b. Villalta, P. W., Hochalter, J. B., and **Hecht, S. S.** (2017) Ultrasensitive high-resolution mass spectrometric analysis of a DNA adduct of the carcinogen benzo[a]pyrene in human lung. *Anal. Chem.* 89, 12735-12742. PMID: PMC6027747.
 - c. Yang, J., Balbo, S., Villalta, P. W., and **Hecht, S. S.** (2019) Analysis of acrolein-derived 1,N²-propanodeoxyguanosine adducts in human lung DNA from smokers and nonsmokers. *Chem. Res. Toxicol.* 32, 318-325. PMID: PMC6644703
 - d. Chen, M., Carmella, S. G., Li, Y., Zhao, Y., and **Hecht, S. S.** (2020) Resolution and quantitation of mercapturic acids derived from crotonaldehyde, methacrolein, and methyl vinyl ketone in the urine of smokers and nonsmokers. *Chem. Res. Toxicol.* 33, 669-677. PMID: PMC7193944
4. *Chemoprevention of cancer.* We applied our understanding of mechanisms of tobacco carcinogenesis to the identification of potential naturally occurring agents which could diminish the risk for cancer. This led to extensive studies on a variety of agents including isothiocyanates, indole-3-carbinol, *myo*-inositol, and related compounds. 2-Phenethyl isothiocyanate (PEITC), a potent inhibitor of carcinogenesis in several systems, was chosen for further development because of its natural occurrence and favorable preclinical profile. Together with our colleagues, we carried out an FDA-approved clinical trial of PEITC as an inhibitor of the metabolic activation of NNK in smokers, which showed modest inhibition, but a far greater effect on detoxification of common environmental agents such as benzene, a lead we are pursuing actively in a clinical trial of watercress, an abundant source of PEITC, to enhance detoxification of these agents.
- a. **Hecht, S. S.**, Trushin, N., Rigotty, J., Carmella, S. G., Borukhova, A., Akerkar, S. A., and Rivenson, A. (1996) Complete inhibition of 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone induced rat lung tumorigenesis and favorable modification of biomarkers by phenethyl isothiocyanate. *Cancer Epidemiol. Biomarkers Prev.* 5, 645-652.
 - b. **Hecht, S. S.**, Kassie, F., and Hatsukami, D. K. (2009) Chemoprevention of lung carcinogenesis in addicted smokers and ex-smokers. *Nat. Rev. Cancer* 9, 476-488. PMID: PMC3876956.
 - c. Yuan, J.-M., Stepanov, I., Murphy, S. E., Wang, R., Allen, S., Jensen, J., Strayer, L., Adams-Haduch, J., Carmella, S. G., Upadhyaya, P., Le, C., Kurzer, M., Nelson, H. H., Yu, M. C., Hatsukami, D. K., and **Hecht, S. S.** (2016) Clinical trial of 2-phenethyl isothiocyanate as an inhibitor of metabolic activation of a tobacco-specific lung carcinogen in cigarette smokers. *Cancer Prev. Res.* 9, 396-405. PMID: PMC4854759.
 - d. Yuan, J. M., Murphy, S. E., Stepanov, I., Wang, R., Carmella, S. G., Nelson, H. H., Hatsukami, D., and **Hecht, S. S.** (2016) 2-Phenethyl isothiocyanate, *glutathione S-transferase M1* and *T1* polymorphisms, and detoxification of volatile organic carcinogens and toxicants in tobacco smoke. *Cancer Prev. Res.* 9, 598-606. PMID: PMC4930697
5. *Expertise in tobacco carcinogenesis.* I have served on multiple U.S. and W.H.O. committees evaluating the tobacco and cancer problem and recommending solutions, and have regularly contributed to U.S. Surgeon General Reports on tobacco and cancer. I have written numerous invited reviews and book chapters on

aspects of tobacco carcinogenesis. With Professor D. Hatsukami, I am currently editing a book entitled "Tobacco and Cancer: the Science and the Story" to be published in 2021 by World Scientific Press.

- a. **Hecht, S. S.** (1999) Tobacco smoke carcinogens and lung cancer. *J. Natl. Cancer Inst.* 91, 1194-1210. (cited 1349 times).
- b. **Hecht, S. S.** (2003) Tobacco carcinogens, their biomarkers, and tobacco-induced cancer. *Nature Rev. Cancer* 3, 733-744. (cited 883 times).
- c. **Hecht, S. S.**, and Szabo, E. (2014) Fifty years of tobacco carcinogenesis research: From mechanisms to early detection and prevention of lung cancer. *Cancer Prev. Res.* 7, 1-8. PMCID: PMC4296669
- d. **Hecht, S. S.** (2017) Oral cell DNA adducts as potential biomarkers for lung cancer susceptibility in cigarette smokers. *Chem Res Toxicol* 30, 367-375. PMCID: PMC5310195

Link to Bibliography Over 850 publications including more than 590 peer-reviewed journal articles and over 250 book chapters and related publications; control plus click to follow link
<http://www.ncbi.nlm.nih.gov/sites/myncbi/stephen.hecht.1/bibliography/41146177/public/?sort=date&direction=ascending>

Stephen S. Hecht, Ph.D.

Bibliography

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613 Original articles and 5 patents	Pages
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Stephen S. Hecht, Ph.D.**Bibliography****Original Articles and Patents**

1. Cope, A.C. and Hecht, S.S. Proximity Effects, XLVIII. Aprotic decomposition of 2-phenylcyclooctanone p-toluenesulfonylhydrazone and 3-phenylcyclooctanone p-toluenesulfonylhydrazone. *J. Am. Chem. Soc.*, **89**: 6920-6925, 1967.
2. Hecht, S.S. and Greene, F.D. Di-t-butyloxadiaziridine, the cyclic form of an azoxy group. Ring-chain isomerism in three-membered rings. *J. Am. Chem. Soc.*, **89**: 6761, 1967.
3. Greene, F.D. and Hecht, S.S. Cyclic azoxy compounds-relation of structural considerations to NMR spectra. *Tetrahedron Lett.*, **7**: 575-578, 1969.
4. Greene, F.D. and Hecht, S.S. Oxadiaziridines, the cyclic form of an azoxy group. Synthesis, valence isomerism, and reactivity. *J. Org. Chem.*, **35**: 2482-2486, 1970.
5. Hecht, S.S. Alkylation of metal derivatives of 1,3-diphenyl-1,3-propanedione with 1,2-diphenyl-3,3-dichlorocyclopropene. *Tetrahedron Lett.*, **50**: 4385-4388, 1970.
6. Hecht, S.S. Transannular carbene reactions; an intermediate organic laboratory experiment. *J. Chem. Ed.*, **48**: 340-341, 1971.
7. Hecht, S.S. Reaction of hydrazine with 1,2-diphenyl-3-dibenzoylmethylenecyclopropene and 1,2-diphenyl-3-diacetylmethylenecyclopropene; formation of pyridazines. *Tetrahedron Lett.*, **35**: 3731-3734, 1972.
8. Rothman, E.S., Hecht, S.S., Pfeffer, P.E., and Silbert, L.S. Enol Esters, XV. Synthesis of highly hindered esters via isopropenyl ester intermediates. *J. Org. Chem.*, **37**: 3551-3552, 1972.
9. Hecht, S.S. and Rothman, E.S. Amide hydrofluoroborates. *J. Org. Chem.*, **38**: 395-396, 1973.
10. Rothman, E.S., Moore, G.G., and Hecht, S.S. Enol Esters, XVII. Reactions of isopropenyl stearate with diethyl malonate, acetoacetic ester, and related keto esters. *J. Org. Chem.*, **38**: 2540-2543, 1973.
11. Hecht, S.S. and Rothman, E.S. Cleavage of saturated fatty acid amides by anhydrous hydrogen fluoride-boron trifluoride. *J. Org. Chem.*, **38**: 3733-3737, 1973.
12. Hecht, S.S., Bondinell, W.E., and Hoffmann, D. Chemical studies on tobacco smoke, XXIX. Chrysene and methylchrysenes: Presence in tobacco smoke and carcinogenicity. *J. Natl. Cancer Inst.*, **53**: 1121-1133, 1974.
13. Hoffmann, D., Hecht, S.S., Ornaf, R.M., and Wynder, E.L. Chemical studies on tobacco smoke, XXX. N'-nitrosornicotine in tobacco. *Science*, **186**: 265-267, 1974.
14. Hecht, S.S., Ornaf, R.M., and Hoffmann, D. Chemical studies on tobacco smoke, XXXIII. N'-Nitrosornicotine in tobacco: Analysis of possible contributing factors and biologic implications. *J. Natl. Cancer Inst.*, **54**: 1237-1244, 1974.
15. Hoffmann, D., Raineri, R., Hecht, S.S., Maronpot, R., and Wynder, E.L. A study of tobacco carcinogenesis, XIV. Effects of N'-nitrosornicotine and N'-nitrosoanabasine in rats. *J. Natl. Cancer Inst.*, **55**: 977-981, 1975.
16. Hecht, S.S., Thorne, R.L., Maronpot, R.R., and Hoffmann, D. A study of tobacco carcinogenesis, XIII. Tumor-promoting subfractions of the weakly acidic fraction. *J. Natl. Cancer Inst.*, **55**: 1329-1336, 1975.

17. Hecht, S.S., Ornaf, R.M., and Hoffmann, D. Chemical studies on tobacco smoke. XLI. Determination of N'-nitrosornicotine in tobacco by high speed liquid chromatography. *Anal. Chem.*, **47**: 2046-2048, 1975.
18. Hecht, S.S. and Rothman, E. A fabric waterproofing process, U.S. Patent 3,899,290, 1975.
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Chapters, Invited Articles, Books and Other Papers

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